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ROGER REYNOLDS

Conlon Nancarrow: Interviews in Mexico City and San Francisco

The unique efforts of Conlon Nancarrow over the past forty years have resulted in a series of compositions for player pianos that have astonished and intrigued those who encountered them. Modestly entitled "Studies," these works now number in the forties and continue to enter new musical terrain. Largely because of their striking rhythmic vitality—several very clearly defined musical lines moving with inexorable temporal independence—they make an entirely novel impact on the ear. They stimulate the musical imagination strongly, in part, I believe, because of the very matter-of-factness with which they go about their business. Nothing is extraneous in Nancarrow's music. Nothing distracts one from confronting his primary intentions.

Born in the United States (though now a citizen of Mexico), Nancarrow's early influences included experience as a jazz trumpet player, and it is perhaps in this circumstance that the origins of his fascination with the clashing of multiple, simultaneous tempos might be sought. His concern is explicit: "temporal dissonance." All other aspects of musical control, pitch selection, gestural and articulative design, rhythmic detail, timbre and dynamics, are thought of as being in the service of tempo clarification.

It is obvious that Nancarrow's engagement with simultaneous tempo relationships developed as a result of a solitary "collaboration" with his two specially prepared Ampico mechanical pianos. Although his earlier instrumental music makes certain rhythmic and metrical demands, it was not until the growth of his relationship with the player pianos—their unflappable precision in responding to the dictates of the punched paper rolls which he prepared—that the depth of his fascination with subtly interacting simultaneous tempos was manifested.

Nancarrow is unaccustomed to talking about his work. It is only in the past few years that the earlier trickle of interested hunters who traced him to his studio in Mexico City grew to disruptive proportions. The interest in his work, originally

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sparked by the use of several early Studies to accompany a dance by Merce Cunningham's dance company (in the late 1950s), subsequently resulted in commercial recordings on the Columbia, New World, and Arch labels, as well as several ambitious publications by Peter Garland's SOUNDINGS Press. An appearance at the New Music America Festival in San Francisco during June 1981 (it was Nancarrow's first visit to the United States in decades), as well as attention from major European figures such as György Ligeti, brought both the composer and his music new and more widespread attention. No substantial reference on him has been generally available, however, and it is the purpose of the following interview materials (they bracket the years during which his music emerged as an international phenomenon) to fill this need. The composer values his peace, and in his wry way hopes that the picture presented here will allow him some respite from the many now intent upon gaining insight into his life and work.

Two interviews follow: the first was done on July 12, 1975, in Mexico City, and the second on June 14, 1981, in San Francisco.

JULY 12, 1975, MEXICO CITY

Roger Reynolds: One can have a music with complex temporal relationships without giving up the convention of a single reference tempo, yet you use several. It is a fundamental aspect of much of your work. You had some jazz background. . . . When did you start thinking about the necessity for different simultaneous tempos rather than freedom or multiplicity within the framework of a single tempo?

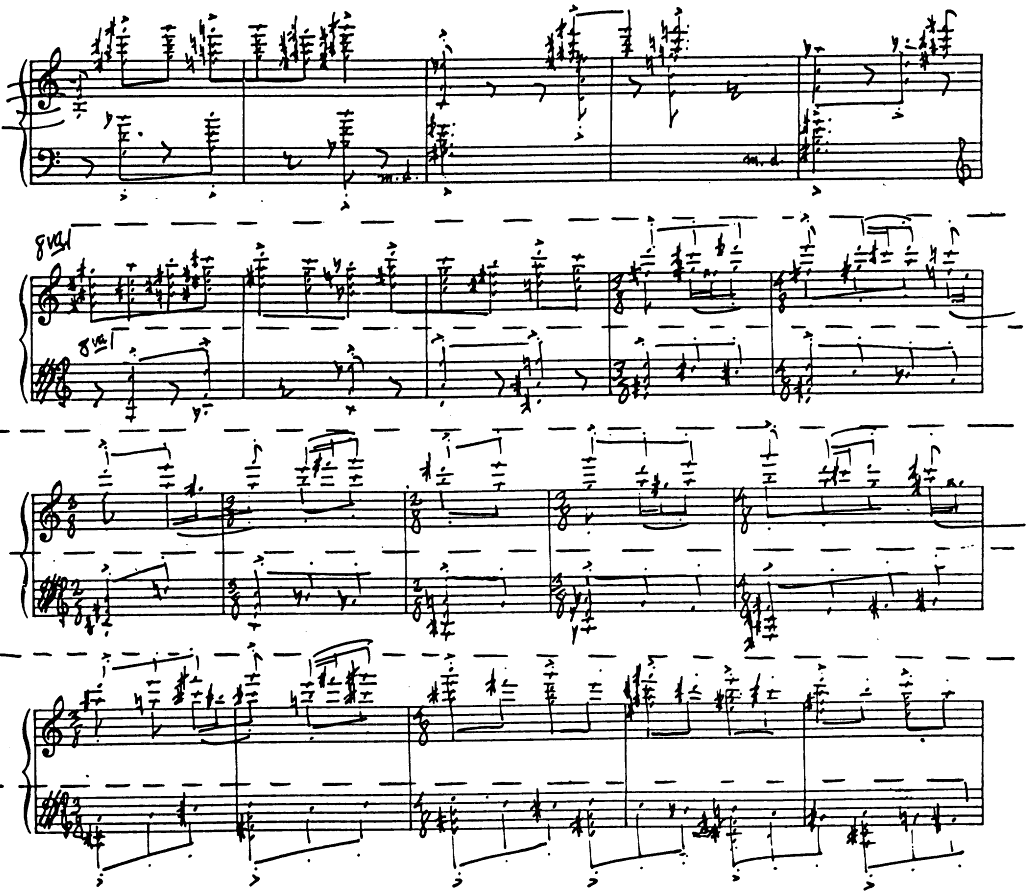
Conlon Nancarrow: I don't know exactly when. It had been in the back of my mind. . . . When I started really working with player pianos, the whole idea of temporal relationships expanded into much more than I had originally thought.

Reynolds: I am curious about the drive that got you into working with player pianos, the origins of the idea that independent tempos are perhaps more basic, more interesting, than the independence that exists within a jazz group, where there's a lot of flexibility between players, but the reference tempo remains common.

Nancarrow: I really don't know when these ideas developed; it wasn't at a specific point. I had written things before that were so difficult to play; more and more I became attracted to this way of working out something. It developed in the actual working with punched rolls. Every time I do something and hear it, it has an effect on the next thing I do.

Reynolds: You said that the piano *Sonatina* (1941) was the last work you wrote out before starting the player piano Studies. Was it complex?

Nancarrow: It was the last for solo piano. It's a little difficult to play but it's quite simple. It was the first thing I punched out. I was practicing punching before starting other things. The *Sonatina* sounds very simple—simple in the sense that there are no abstruse complications in it, but it is not very "pianistic," and pianists, with reason, like to play things that are. This is the reason, I suppose, that they didn't want to perform it.



Example 1. From Sonatina for Piano.

Reynolds: The scores of the *Toccata* (for piano and violin) and the *Prelude and Blues* for piano in the New Music Edition (January 1938) don't include 5 against 6, and so on, although there are uncommon groupings. Are all the rhythmic relationships in works of this period additive?

Nancarrow: All. There are some unusual groupings . . . but all on the beat or regular subdivisions. Always, mainly because of the question of performance. The techniques of performance now are so different than they were then. People play fantastic things now, rhythmically, compared to what they did thirty years ago.

Reynolds: Were you interested in the rhythmic practices described in Cowell's *New Musical Resources?*

Nancarrow: Of course. All of Cowell's ideas in that book were fascinating. I had never been really interested in tonal experimentation. I am interested in different tunings and so on, but not enough to go into them. My interest has always been in tempo, but there don't appear to be many "theories" of rhythm or tempo.

Reynolds: Cowell suggested other divisions of the beat than duple and triple, the creation of a larger flexibility without giving up the idea of a single reference tempo. You were also, at that time, still accepting the single (usually rapid) tempo, but subdividing it minutely. Were you conscious then—because of your interest in time—of writing simultaneous independent *lines* rather than elaborating the homophonic tendencies of piano technique.

Nancarrow: Of course. But, getting to the point of thinking in irrational relationships of tempo, I really hadn't even thought of that until I got to work on the Studies. Then, little by little, I wanted to do something beyond the additive.

Reynolds: What kind of things were you writing in the 1930s?

Nancarrow: Chamber music. I wrote one work for symphony orchestra, but only one—a septet for an odd combination of winds and piano, various things. In fact, the septet was played once in New York after I came back from Spain—I think in 1941. In any case, that was one that was played! [laughs] Actually it *wasn't* very complicated. It had a conductor. The League of Composers had very good musicians. They got them from studios there, from the radio. There were two rehearsals. For one rehearsal, four came. The second rehearsal, three, and one of the original four. So there wasn't one session with the whole group. And when they played it, a couple of instruments lost their place right at the beginning. All through the piece, they were playing in some other place . . . [laughs].

[The septet's seven lines] were independently characterized, but always within the beat. There were no complications, apart from certain little things. The beat was there all the time.

Reynolds: In 1955, Elliott Carter wrote an article for *The Score* magazine in England. It made reference to the idea that the American composer, presumably from jazz experience, felt rhythm was an additive process based upon small units that could be quite variously grouped. He also noted elaborations of divisive ideals (complex patterns of differing simultaneous beat subdivisions). Composers have taken various approaches to time line flexibility, to the making of music that fosters playing together and yet playing flexibly. In jazz one certainly has a very powerful experience of both things, of beat and fluidity.

Nancarrow: Well, that's one of the basic characteristics of jazz: the beat and around the beat . . . and then all kinds of things happen. . . .

Reynolds: An important aspect of your music is that even though the beat is relentless, and even though one works around it or against it, there is a naturalness and inevitability to the lines. The effect is analagous to the way jazz musicians play, but the tension is greater. American symphonic music of the 1930s and 1940s was certainly jazz-influenced, but it remained basically chordal and homophonic.

Nancarrow: Most of those symphonic jazz things have mainly a harmonic-melodic connotation rather than rhythmic. Very seldom do you get any of the rhythmic aspect of jazz. Let's say a composer wrote a piece of jazz as it's played, which is very difficult to do exactly or even nearly so, and you had orchestral musicians play it. . . . It doesn't sound like jazz at all. The average symphony musician simply cannot play jazz.

Reynolds: In your earlier music, did you ever try the idea of allowing a player to go his own way against a reference or experiment with several tempos?

Nancarrow: No, because up until about ten years ago, if you did such a thing, the musician would look at you and say, "What do you mean? What's this all about?" No, the possibility of that sort of thing is very recent.

Reynolds: Were your instrumental works then metrically complex?

Nancarrow: Occasionally, but not too complex—again, for reasons of performance. In fact, I usually preferred to write everything out in four, regardless of what was actually happening; the conductor, at least, always has an orientation. Then I used accents to try to bring out the metrical facts. My recent Studies have very little to do with meter.

Reynolds: Did you have other experiences that were any less deflating than the septet?

Nancarrow: I had one here in Mexico during the 1940s. They had a series of concerts of contemporary music, more or less contemporary music. [Rodolfo] Halffter was a friend of mine, and asked me to write something for the concerts. I did, a trio for clarinet, bassoon, and piano. Don't forget, this was many years ago, and the piece was nothing special, sort of Bartokian. . . . I went to the first rehearsal, or reading. I knew the pianist fairly well, and later he told me that the bassoonist and clarinetist said, "We can't play this and have the public thinking we're making the wrong notes." That was *harmonic* wrongness. It wasn't so complicated, but they didn't play it. I still have the printed program that was supposed to be for the performance. The temporal aspect was not too easy, a little tricky, but the excuse they made was simply harmonic. They didn't want people to think that they were playing wrong notes.

Reynolds: It's obvious that there was motivation for you to get into working with something like the player piano. What about the use of canon? Was it there from the beginning?

Nancarrow: It developed more and more. One reason was my interest in temporally dissonant relationships. Temporal dissonance is as hard to define as tonal dissonance. I certainly would not define a temporal relation of 1 to 2 as dissonant, but I would call a 2 to 3 relation mildly dissonant, and more and more so up to the extreme of the irrational ones. When you use canon, you are repeating the same thing melodically, so you don't have to think about it, and you can concern yourself more with temporal aspects. You simplify the melodic elements, and you can follow more the temporal material.

Reynolds: Varèse said something like that in response to the comment that his motivic and harmonic construction was static. He made an analogy to spatial relationships, that he took a single sound object and turned it around, looked at it metaphorically from different sides. When he used the sirens in *Ionization*, though, no matter how he insisted it was an abstract sound, it became concrete.

Nancarrow: My use of canon has an analagous motivation. I was interested, the other day,[1] when you discussed the use of sounds in music, and their freedom from representational concepts. I always felt that the sirens were problematic. Of course, this was one of the traps of early (and some later) electronic music. A fart is a fart.

Reynolds: One doesn't usually have to deal with representationality in music, sounds having a past, another identity. . . . But to return to canon, have you always taken it literally, have you done anything with augmentation or inversion?

Nancarrow: Yes, in the past. In fact, I don't know why most of my music is canonic—not necessarily strict canons always—but canonic or imitative in a free sense. . . .

Some of the later ones are strictly canonic from beginning to end—for example *No. 37*. It is probably the longest one I have done, and from beginning to end it's in twelve voices [150 against 160 5/7 against 168 3/4; 180; 187 1/2; 200; 210; 225; 240; 250; 262 1/2; 281 1/4]. Each section is more or less independent, and usually has a different temporal pattern of when the voices enter, except that it's always canonic. (See Example 2.)

Reynolds: One could write one very long line that is simply replicated and combined with itself according to certain constraints; it could become responsible for the form of the piece.

Nancarrow: I don't think of it that way. I don't think of a line, but of a collection of temporal relationships and, in fact, the melodic line is simply a crutch in order to realize certain temporal ideas. In *No. 37,* there are all kinds of sections with completely different types of atmospheres—melodic and rhythmic relationships. The rhythmic proportions between lines stay the same except that they appear to change because of the way I realize them, because of the varying entrance patterns of voices.

Reynolds: Would the requirement of strict canonic procedure make length a problem?

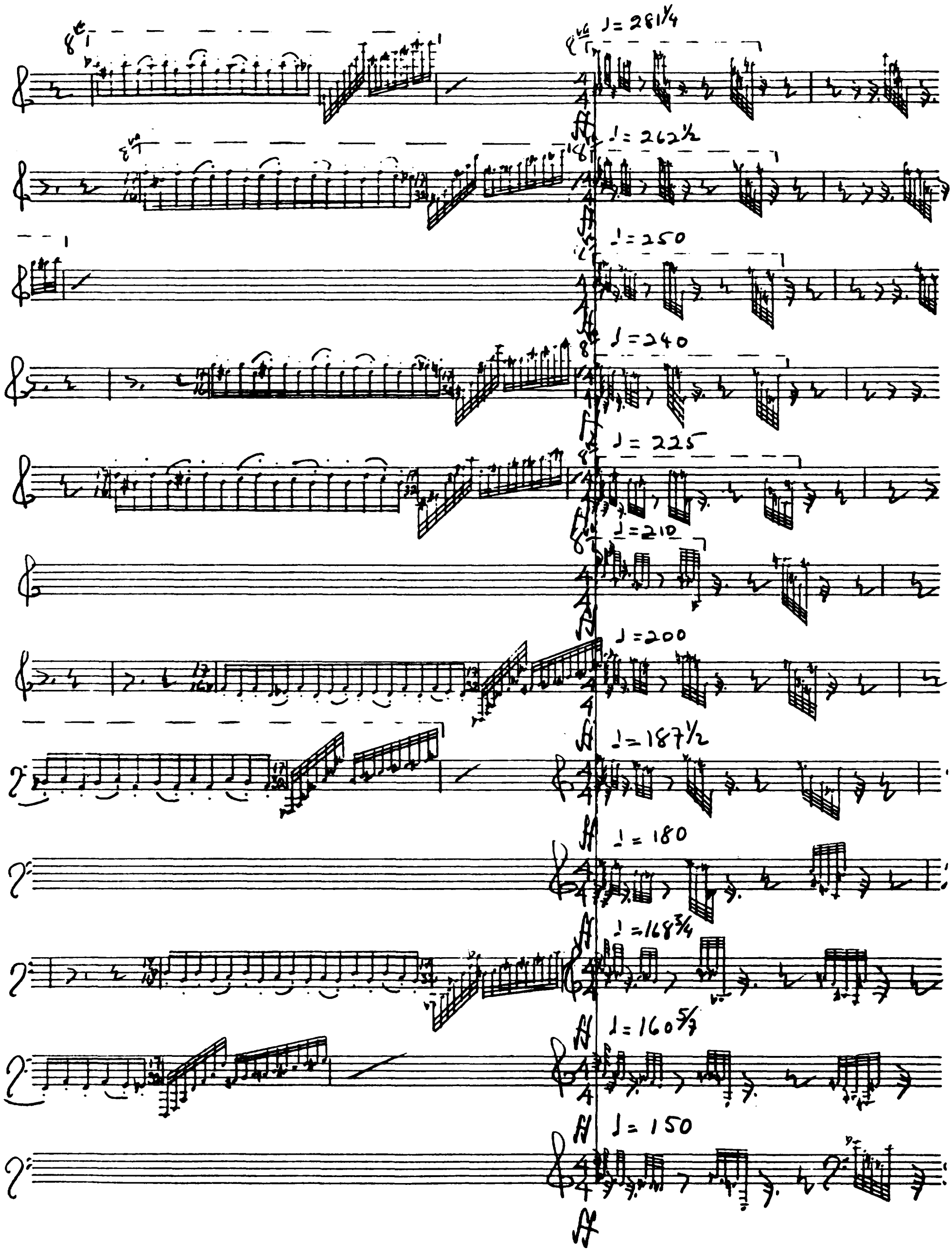
Nancarrow: Not because of pitch. There is another factor. If you have traditional canon, the imitation is in exactly the same tempo, even if augmented, for example. If you carry that on too long, you reach a static situation. I feel that clashes of tempo carry my music, not the fact of canon, not pitch imitation.

Reynolds: When you begin a composition, how do you go about framing it? What kinds of ideas generate it?

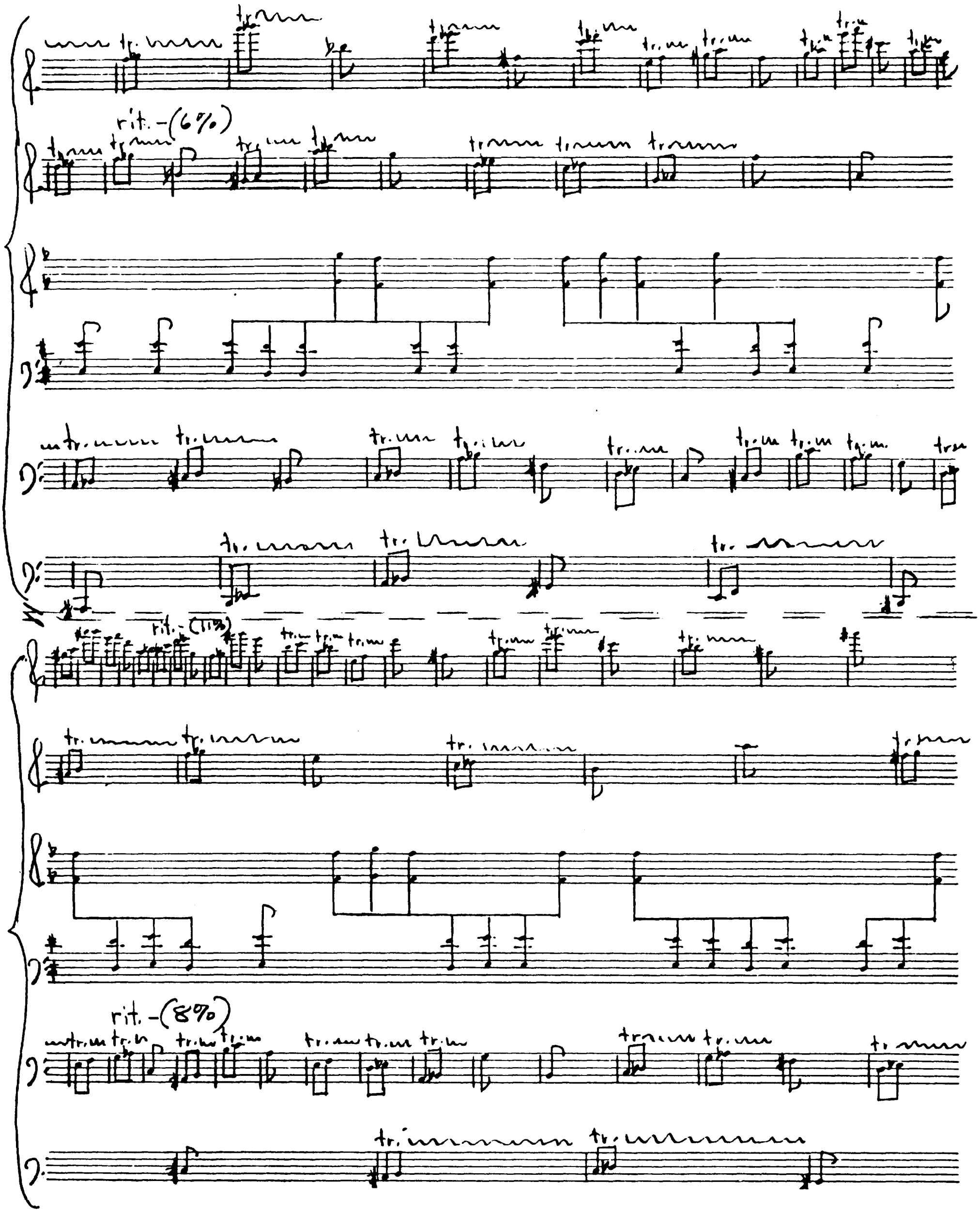
Nancarrow: I don't write out a long melody and say, "Well, now, I am going to make a canon out of it." Every piece is different. As a matter of fact, one of the reasons I suppose that I concentrate more on tempo relationships is that I have little melodic or harmonic invention.

Reynolds: Like anyone, you exploit your strengths, and these are determined by your interests. . . . It's a two-sided thing. When you began *No. 27* (which is particularly striking because it has an incessant, ostinatic core), did you plan to use an ostinato?

Nancarrow: Sometimes things get changed, but usually before I start working on a piece, I've got pretty much the whole idea in my head. I know I am going to do certain things. With *No. 27* I thought of the whole piece as an ostinato, that I was going to have the exact proportions of sections worked out, before composing it. There would be a certain amount of this and a certain amount of that, but through the whole was going to be an ostinato—that against a constantly shifting accelera-



Example 2. From Study no. 37.



Example 3. From Study no. 27.

tion and retarding. In fact, I like to think of the ostinato in that piece as the ticking of an ontological clock. The rest of it—the other lines—wandering around. . . . There are four different percentages of acceleration and ritard that react against the ostinato: 5%, 6%, 8%, and 11% ritards and accelerations. Incidentally, that's the only piece I ever did over again. The work I put in on that. . . . Usually, I work on rolls at the middle speed of the piano so that when I actually put it on and want it a little faster or a little slower, I just shift the piano's speed up or down. Well, in this one I miscalculated, and the more I played it, the more I realized that it was too slow. The maximum speed was still too slow, and it bothered me more and more. Finally I sat down and redrew all of the percentage strips[2] at a different speed and repunched the whole roll again. I am glad I did it, because it's so much better now. The dynamic changes and doublings sometimes make it seem that the ostinato changes speed, but it doesn't.

Reynolds: I had the feeling that it actually changed, but that must have been an artifact of the way you worked against it with other tempos. The RCA synthesizer is a punching machine, too. You run a paper roll through it, and the relationships between the holes are constant if the roll advances at a constant rate. But one can change the rate. In demonstrating his early work with the synthesizer, Milton Babbitt played a realization of a Bach invention at a reasonable tempo. He said that it would sound bright, and it did. Then he played it by running the roll twice as fast, combining the two versions and pointing out that when the fast one stopped, you would have the feeling that the original was lethargic. Of course, one did, but the effect was more graphic than expected.

Nancarrow: Incidentally, when you mention the two simultaneous speeds and then the faster one stopping and the relationship that's heard—that was one of the fallacies of the period of total serialism. The idea of serialized dynamics was absurd, assuming that you could have twelve dynamics and play them accurately. A piano after a pianissimo is much louder than a piano after a forte. It defeated its own ends . . . became meaningless.

Reynolds: To return to the 27th Study, the ostinato is relentless, and there is also another basic impulse working: accumulation. In general, the ostinato, the piece, gets stronger and more obsessive partly in terms of density (from single notes to octaves, triads, and so on), and partly because the dynamic level also tends to rise. But there is a wide variety of experience inherent in the basic notion of a stable, core ostinato and overlays of varying speed. Would "accumulation" have been a part of the thinking out before you started?

Nancarrow: Yes, in a general way. But accumulation is unrelated to the "ontological clock" idea, except in the sense that accumulation emphasizes the "clock" more and more.

Reynolds: The player piano medium appears to involve so much drudgery in realizing the rolls. Good planning is a practical imperative. Are you able to play the rolls as you go along? Do you try them out to see where you are?

Nancarrow: I don't have to wait. Usually, after I have done several minutes of actual sound, I put it in the piano to see how it goes. In the past, once or twice I made a terrible mistake in relationships and got off. Generally, I plan ahead and write all of the Study out first, before beginning the punching. I write it down in such a way, now, that no one could really figure it out, but the first twenty Studies I wrote out in standard notation. There were rhythmic juxtapositions where measures came, but they were standard because of the fixed ratchet principle of the punching machine. Everything was additively related to a small unit. Now, almost all of the Studies I do are in irrational relationships. Of course, I have more or less an idea of what I am going to do and of the whole piece before I do anything: the general plan. I mark out on a blank roll of paper all of the proportional relationships of tempo, using what I think is going to be the smallest (fastest) note value as the unit of measure. Of course, occasionally, if I have to use something even faster, I just go over the roll and put in the smaller values, showing the relations to the basic scale in the score [cf. Example 6]. I mark the whole thing out from beginning to end on the blank player piano roll. It's quite accurate, I mean, as exact as I can make it. Then I take music paper and I block off the roll according to a basic size (the width of the music paper); next I take the marked proportions from the roll onto the music paper. It is not as exact as the roll, but it's fairly accurate so that the vertical relationships of tempo units will be more or less what I see graphically on the paper. I establish the pattern of temporal relationships before the pitches. The marked out roll has no rhythms, only a series of sixteenth notes, or whatever. When I start to write the piece, the melody and rhythm—the harmonic connotation—are all done together.

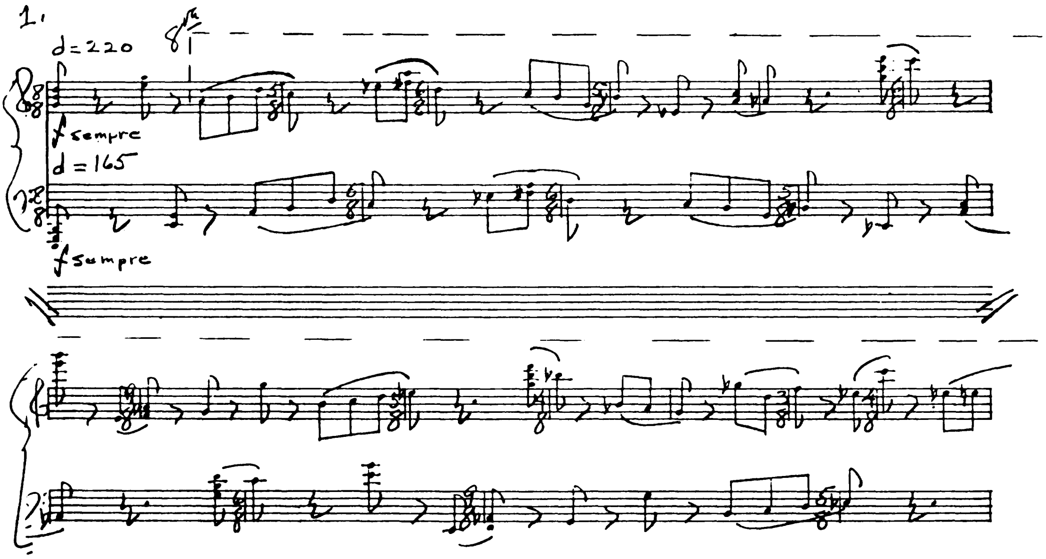
Reynolds: Do you have thematic notions before beginning?

Nancarrow: Just generally. The thematic notions are usually rhythmical rather than melodic.

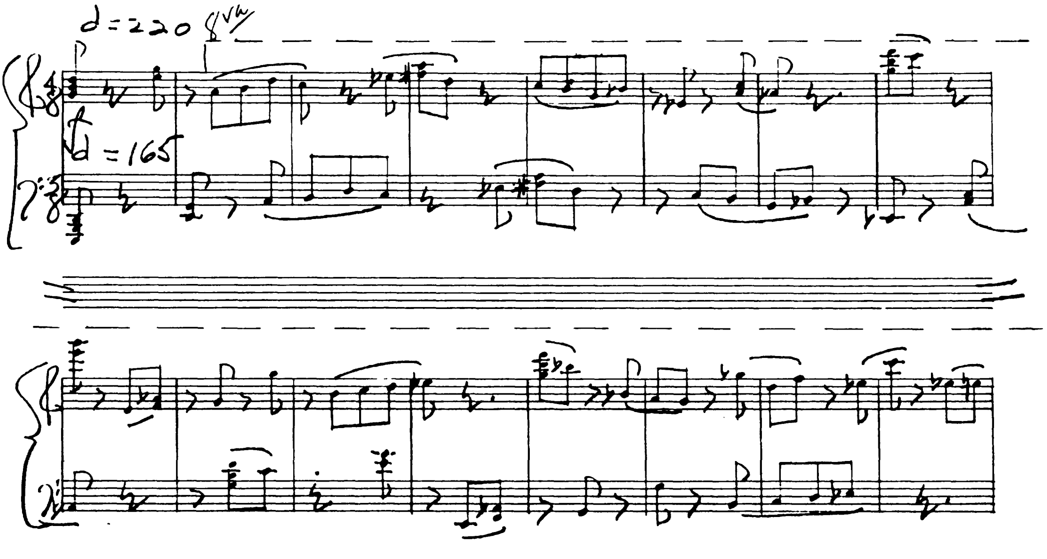
I use melody *also in a rhythmic sense,* in the sense of accentuating a certain rhythm by contour. But I don't sketch the melodic contours before beginning. I do the melodies and the harmonic relationship all at the same time, on the music paper that is marked out. The marked out units—in *Study No. 39* that I am working now, 60 against 61—define my possibilities, where I can put the actual notes. What I am doing here, in a sense, is establishing graphically what was given to me before by the regularly spaced notches in the punching machine.[3]

Reynolds: What effect does your sense of canon—of imitative structure—have on your feelings about form? You mentioned that canonic techniques freed you of worry about pitch relationships. What about its relationship to overall form?

Nancarrow: You know, it's funny, I never really think of form as such. I work in a certain way, but I don't think of any specific form. It comes out for me more or less as a result of other things. In *No. 36*, with its 17 against 18 against 19 against 20 relationships, the distinct speeds approach each other until finally in the middle of the piece they come out exactly together [cf. Example 7]. Twenty is the last one to start. In the middle the process reverses, until finally the 17 speed is the last to finish. In *No.15* (3 against 4) the two voices begin exactly together. It goes along again to the middle and then reverses, three in one voice, four in the other, coming out at the end together again. In spite of the fact that it's very simple, 3 against 4—I guess one pianist could play it, almost—the fact is that the "three voice," for example, is not just going in groups of threes. The phrasing and everything is completely independent of the basic three measurement. Similarly in the "four voice." It is a *tempo* relationship, not a metrical one.



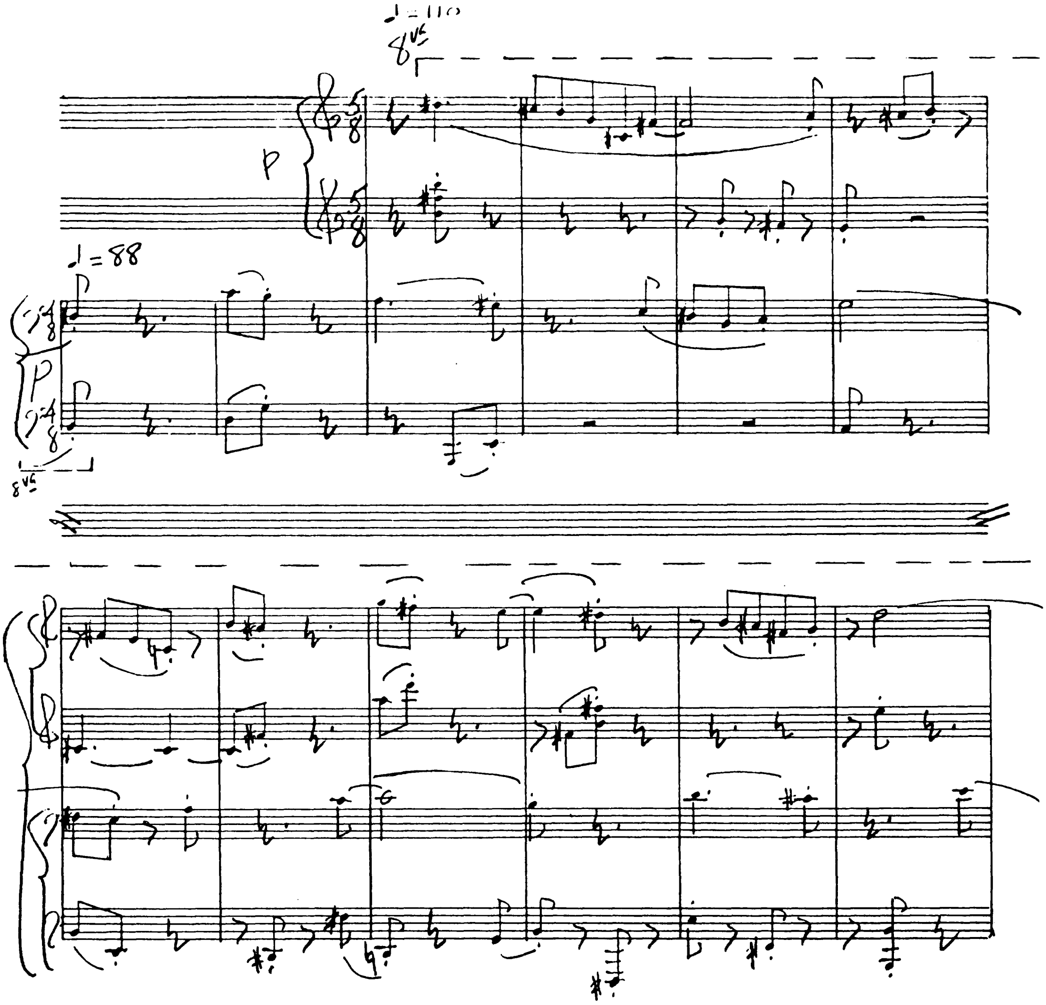
Example 4. Music as notated in Study no. 15 (Canon, 3/4).



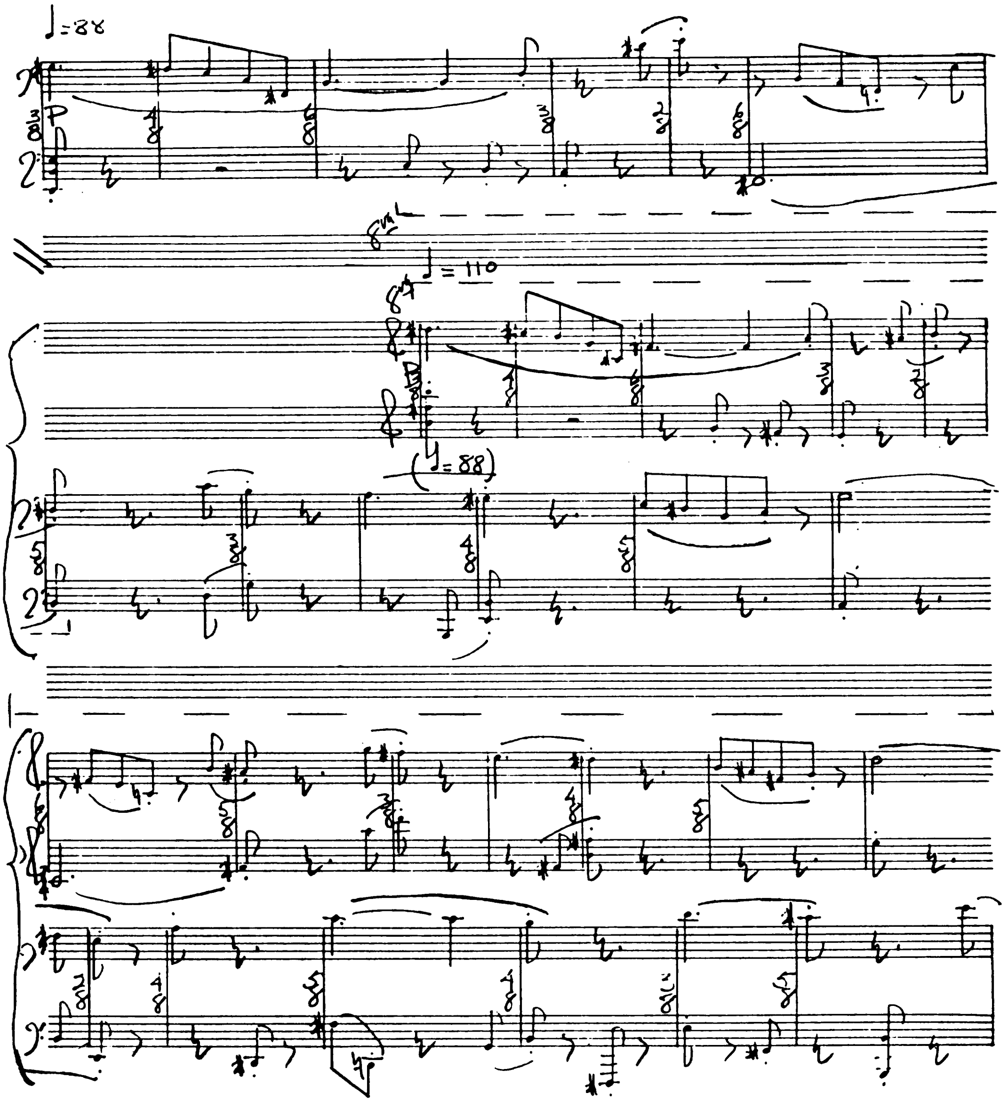
Example 5. Music of Example 4 notated to show possibility of regular bars.

Reynolds: You have mentioned that, until *No. 20,* you had a mechanism that only allowed you to punch under the control of a ratchet device. Did all of the early works involve only the additive relationships that this device allowed?

Nancarrow: Right. I stay within a fixed unit. There is a basic small division, so I can have multiple tempi entering in simple ways, 3 against 4, 4 against 5—things like that. Two against three, you can do within a notation of 6/8, of course. In fact in the first twenty Studies, there is no really *very* complex relationship; they are all fairly simple. But these relationships are not, for example, 4 against 5 in the sense of a relationship within a measure. There is a tempo of 4 against [a tempo of] 5. I always think of 4 against 5 (or whatever) as a temporal relationship, not a measure relationship—the "4" going along at its speed and the "5" at its speed. The measure or the accents within each come at different points. Each is a free line in that tempo.



Example 6. Excerpts from Study no. 14 (Canon, 4/5) presented so as to show tempo opposition.



Example 7. Excerpt from Study no. 14 as notated.

Reynolds: Dealing with small divisions of a large beat, with a large enough denominator, you can do almost anything.

Nancarrow: You can't do the irrational ones; there's no fraction corresponding to an irrational number like the square root of two. But the relationships that you mentioned as possible within rational numbers . . . the catch is that if you get up to, say, 23 against 47, the enormous time span to one beat means that you couldn't hear it. With the notched mechanism, the most complicated tempo relationship I ever got to in the specific sense was probably 4 against 5.

Reynolds: You mentioned synchrony several times, the importance of things coming out exactly together, also the way that finishing a piece and hearing it changes what you feel, and how the desire to have a machine that was not only additive evolved—something that would allow controlled irrationality. How have you felt about enlarging the situation to two pianos? It entails a variety of problems that you may not want to deal with practically.

Nancarrow: Well, I have to. One problem I don't want to deal with is that they are not synchronized. I want the two pianos synchronized so I can work out things exactly; as a matter of fact, what I would like is to have three pianos synchronized . . . have all kinds of possibilities. Actually, I now have a third piano that is being fixed up. I know synchronizing can be done theoretically, but I don't know anyone who can do it. It can be done electronically, so there's no point in doing it mechanically. In fact, it's not even a great problem. You would put a hole on both rolls every half inch or so. There would have to be someone who knows quite a bit about electronics and quite a bit about player pianos, and I doubt that many people are in that category. I feel frustrated that I can't synchronize them, but I am going ahead and working in this unsynchronized way because I have no other choice. The fact that every once in a while it comes out the way I want it doesn't make me very happy.

Reynolds: It would seem that not only the two pianos, but their difference in timbral character[4] would force you, intuitively, to start thinking in slightly different ways. You're accustomed to planning ahead and wanting things to come out in a certain way . . .

Nancarrow: Well, of course. In *No. 41c*[5] there are difficulties with blocking out the dynamic contrasts so that they fit. The two independent pieces [*41a* and *41b*] have quickly changing dynamics all through, and there is absolutely no way to synchronize those things in the combined version [*41c*]. I have to think of another way of doing things.

It would [be useful] if I could synchronize them, you know, at one point, you could have one playing against the other, just the *sound* of one piano against the other, maybe on the same note, and have it rhythmically off, slightly out of phase. . . . Of course, there are all kinds of possibilities if they are synchronized, but I couldn't dream of doing it this way.

Reynolds: In *41b*, you have a succession of evenly repeated notes at a certain tempo followed immediately by another series of repeated notes in a slightly faster tempo, and so on. Later, they come together in different ways while maintaining their subtly independent tempos. One of the combinations I particularly remember was a pseudo-ostinato in the base. Instead of alternating evenly, its elements get into and out of phase, creating an interesting dichotomy between independent parts and an uneasy unity.

Since you have control over acceleration and ritard, you could use very slow shifts in tempo between the two pianos, and probably at least approximate a desired effect for some period. It would be unpredictable as to exactly when it would happen, but you could get a subtle interplay between the two pianos.

Nancarrow: Yes. What I could do, also, would be to do a very short section for the two, and regulate it completely until I got it exactly the way I want it together, record it and then do another section.

Reynolds: You mentioned that, when Copland visited you [here in Mexico] and reacted to hearing your player piano rolls, he referred to his pleasure in listening to an orchestral horn player trying to play a high note, hoping he will make it, but aware of the possibility that he may not.

Nancarrow: The pleasure in the possibility, only the possibility, not in the wrong note.

Reynolds: On the other hand, Cage said to you, when he heard *40a* and *b*, "Isn't it lovely you can't tell how they are going to come together?" Those are polar positions, and I gather that your tendency is to want things in a particular way.

Nancarrow: Well, very much. That's my character.

Reynolds: A number of the Studies include, literally, things that have never been heard before. I mean, not just as compositions but as phenomena that had not previously been experienced.

Nancarrow: I think this is true, especially of the later Studies. I have a feeling that still in electronic music it would be very difficult to do just that particular thing, those particular simultaneous tempo relationships. Of course, people haven't heard it. It hasn't been done. It couldn't be done before, and only now in electronic music it can be. But, for whatever reason, composers are not interested. I don't know . . .

Reynolds: You must have a strong intuitive sense of what something is going to sound like because of your immersion in the medium, but when you actually hear one of the Studies, what sort of responses do you have?

Nancarrow: That's very hard to say. *No. 27*, I told you, I did over again. If I did any of them over again, there are whole series of little things I would do slightly differently. A phrase here . . . a note there. . . . If it's something really bad, I just discard the roll, but usually it's only a small thing. In *No. 27* I had the chance of doing it again, to make those little changes that I wanted to.

Reynolds: No. 27 is a very strong piece. Maybe it reflects that editorial process.

Nancarrow: I think that if I played the new version as slowly as the old one, most people would not hear any difference. There are tiny changes . . . a little more this way or that way . . . but the tempo is the major fact.

I can edit in the sense of changing a note here and there—by putting a piece of Scotch tape over it and punching the roll in another place—but not in a major way. If you change a lot of notes, it gets messy. You can splice, but you have to punch out a section a couple of feet wide. That's quite a bit of work.

Reynolds: How long does it take to punch out two feet[6] of a normal complexity in your current Studies?

Nancarrow: Probably a couple of days. Ten hours maybe. You know the 40th Study for two pianos saved me a lot of work. *No. 40b* is two performances of the same piece [*40a*] at different speeds. I simply put in two paper rolls when I punched it. It was one of the things I decided to do to save myself. Of course, *41a* and *41b* are two separate pieces.

Reynolds: There are differences between the process of conceiving an idea and planning its realization and then actually hearing the result. If that contrast were not a pleasurable one, one would not be interested in going through the process.

Nancarrow: Naturally. As a matter of fact, after I finish punching a piece and before I put it on, you have no idea how excited I am. What is going to happen? The first time I listen, it's just a matter of how well I did what I thought I was doing. Naturally, the more it comes out the way I thought I did it, the better I feel. It's as simple as that. Later, I get bored with some, but not with others.

Reynolds: In the two-piano Studies, you are going to be faced with the fact that there are more things happening that you haven't foreseen.

Nancarrow: Not only that, but everytime I play one of them, something else happens. That's what I don't like. It's all up in the air.

Reynolds: But surely there must have been some coordination in the planning of *41a* and *41b*.

Nancarrow: The only coordination was a sort of related milieu . . . the general idea that they both build up at a similar point to a high volume and then taper off. There is no attempt at coordinating specific moments because the synchrony is just too vague, especially in pieces as long as they are. Harmonically, there are similar types of figures, but used in different ways in *a* and *b*. It's hard to explain how I thought of those relationships. Anyway, the two-piano Studies are not as successful as I would like.

Reynolds: In the later Studies, at least after *20*, you have used more abstract effects: extreme speeds and large-scale pitch gestures—dense runs like glissandos over the entire keyboard—very rapid trill figures and ostinatos in extreme registers. There is a growth of exploration. In *No. 36*, for example, there is a passage of very rapidly repeating, interlocking ostinatos in the high register. They create low-register difference tones. Such textures result in *timbric* expansion, differences in sound quality through sheer speed and careful disposition.

You said that the roll can go fourteen feet a minute [2.8 inches per second]. That works out to a rate of approximately thirteen repetitions a second on a single pitch.

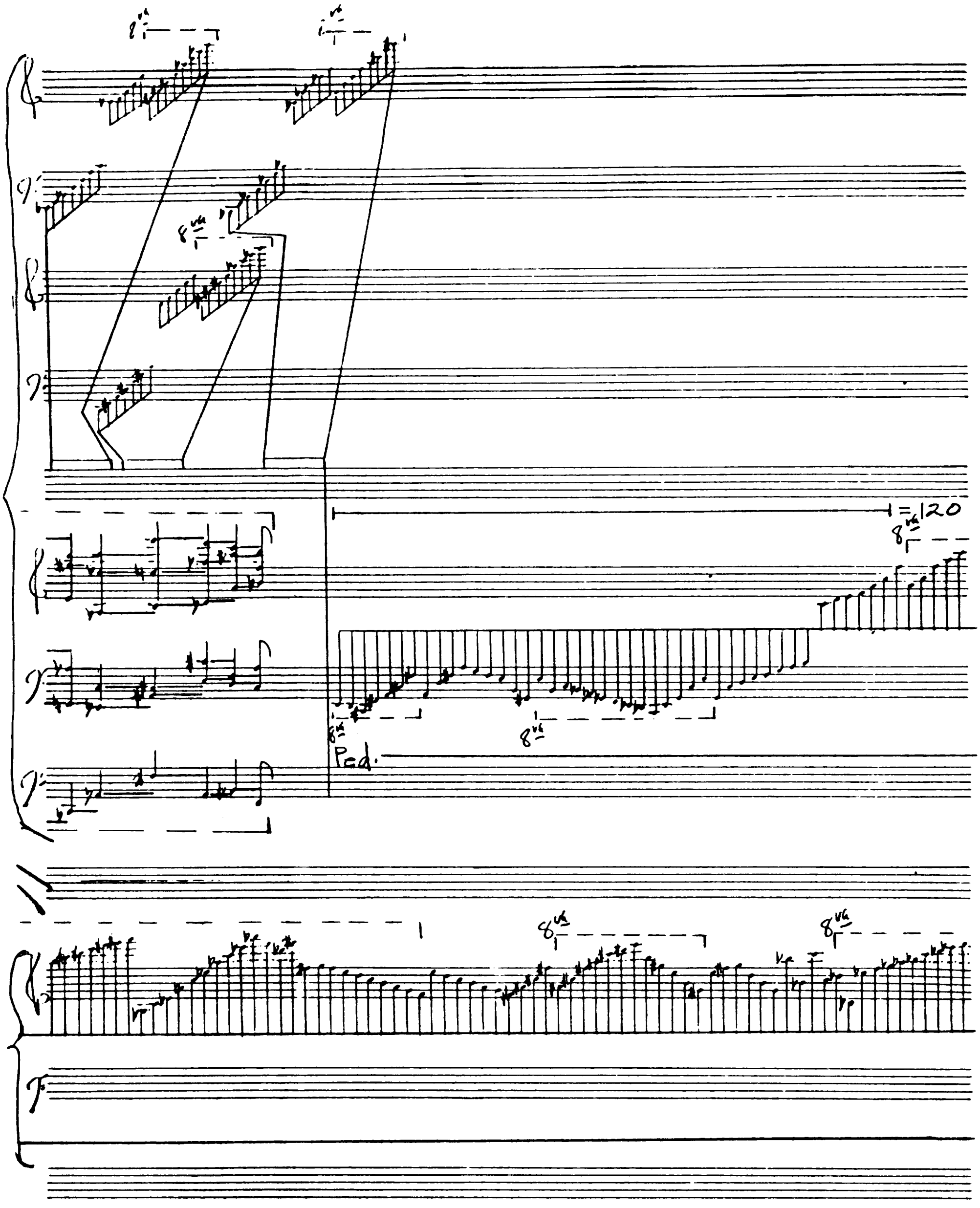
Nancarrow: Roughly, yes. If you punch every hole, it becomes a sustained note.

Reynolds: And if every other one is punched, it is the most rapid possible repetition (thirteen per second). What about off-setting? Can you do one row at the closest spacing, controlling the repetition of one note, and then do another row, offset slightly, and controlling a second note?

Nancarrow: Oh, I frequently do that. That's a trill.

Reynolds: Then the trill rate with two off-set repetitions would be twenty-six per second.

Nancarrow: If you change pitches, there's a very fast upper limit to the speed of events that is possible. *No. 25*, for example, ends with the pedal down and very rapid figures going all over the piano; it's all on the Columbia record.[7]



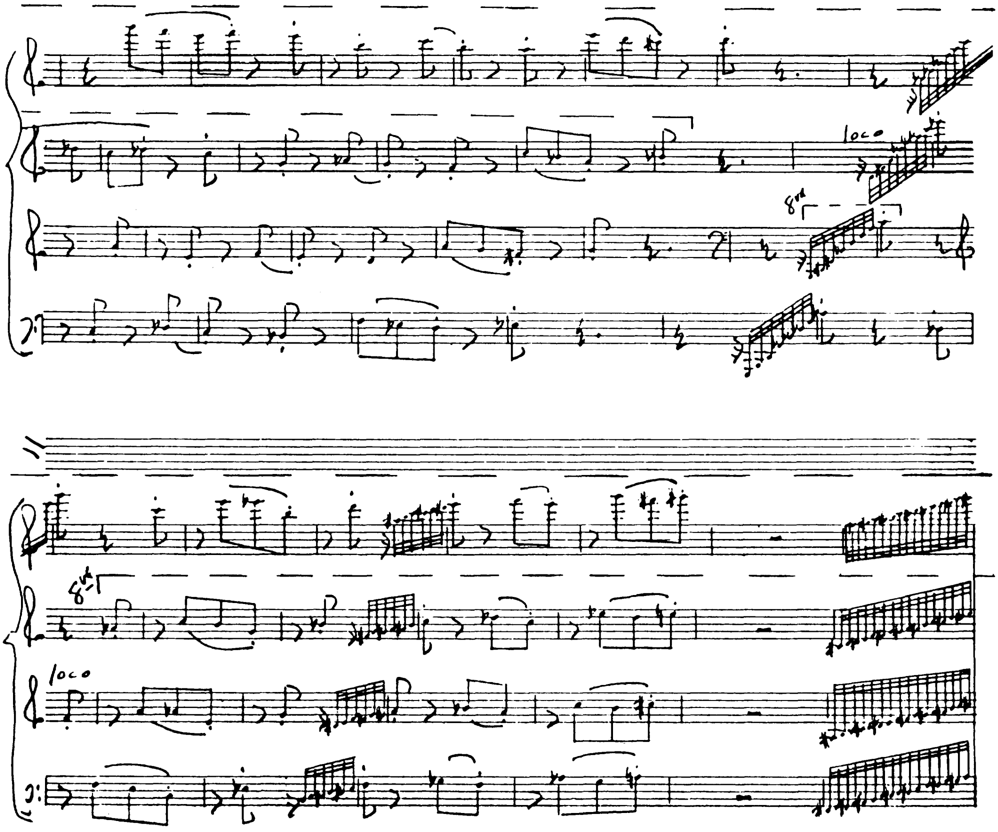
Example 8. From Study no. 25.

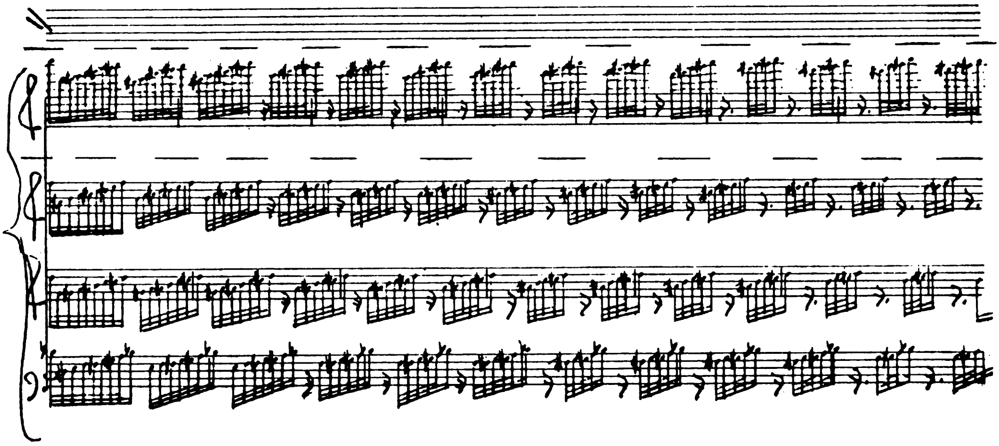
My only problem with that last section was being sure that I didn't repeat any note out of all of the eighty-eight before it made the minimum distance necessary between punches. It was all so close together that I had to be very careful.

But, you know, on the subject of speed . . . let's say you take a triad and start arpeggiating it faster and faster. Finally, even though you're still arpeggiating, it will sound simultaneous to the average ear. There's a point where you can't draw the line between speed and simultaneity.

If you play 2,000 notes in the time span of two seconds, they are obviously not simultaneous; but if you isolate ten consecutive notes from the same group, they would sound simultaneous simply because the ear could not make that fine a distinction. That is the kind of thing that would be interesting to try electronically. I have a feeling that the result of 2,000 notes in two seconds would be no sensation of speed at all, but a strange sound that lasts two seconds.

Long ago, every so often, I'd get a new surprise—the effect of some combination when it was played on the player piano. For a long time I hadn't had any, but with that particular point in *No. 36* that you mentioned earlier, I got a shock. Really, I didn't expect it. It's in the score, exactly what I got there, but. . . . This is the point that I mentioned earlier (cf. Example 7) where the tempos of 17 against 18 against 19 against 20 come together. Here is where you begin to hear that strange effect,





Example 9. From page 23 of Study no. 36.

and especially on the next page with shorter motives offset in all four parts. I liked the result, but it wasn't what I was expecting.

Reynolds: Before settling on the player piano, did you ever produce works using other forms of mechanical reproduction?

Nancarrow: No. Except that once I did a piece for tape.

Reynolds: You worked at one point with a prepared player piano, that is, a more complex preparation, because your present pianos are prepared, too, in a sense.

Nancarrow: The trouble with the Cage type of prepared piano, which I would very much like to have, is that it is extremely difficult to do with an upright. The objects you put between the strings on a grand stay there—they don't roll or slide down. The other piano I am having repaired will have normal hammers, but I am going to try to prepare it somehow. I did one piece for prepared player grand, a bolt here, a rubber there. . . . It was a baby grand, but I had so much trouble trying to keep the thing in working order, I finally sold it.

Reynolds: Preparation suggests an interest in timbre. Having heard you say so much about your temporal interests, I expect that you were using timbre to try to get a further delineation of complex tempo relationships.

Nancarrow: Of course, that's what I would use it for. In fact, the one piece I wrote for the prepared player grand[8] was pure rhythm. Each section of the piano has a particular rhythm with certain combinations of the prepared and the nonprepared notes, and they alternate in different ways. But there is no melody at all in that Study.

Reynolds: How did you prepare your current uprights?

Nancarrow: In the beginning, I tried various things. The first was called a mandolin attachment. It is a wooden strip with a lot of little leather straps fixed with metallic things that dangle in front of the strings. You can lower or raise the wooden strip, and I liked the idea that you could have a normal piano or altered sound. Unfortunately, it was a mess, the leather straps were always getting tangled in the strings, especially with loud playing. Then I tried soaking the hammers in lacquer, hardening the felt. That wasn't too bad, but it wasn't what I wanted. I tried various other things; then finally settled on these: one of them [has] hardwood hammers with steel straps over them and the other, felt hammers covered with leather in which are embedded the little metallic snaps that are used on clothing. The felt backing cushions a little, then the leather, and then, that metallic snap.

Reynolds: Where did the punching apparatus come from?

Nancarrow: Oh, that was on my last trip to the States in 1947, as I remember. I went up there to get something made so I could punch. I looked all over the place and finally found someone who worked for the old QRS player piano company. They make big machines, but he had a smaller private device that was more flexible. (The big commercial machines can only do very limited types of music.) The problem was to get someone to copy it, to make one at least similar. I also had slightly different ideas. . . . Finally, I found a man down in the Village. He had a shop that repaired old musical instruments, lutes, harpsichords and all kinds of things—a real character. I was in there one day and just happened to mention that I was looking for someone who could copy a punching machine. Well, it turned out that he was interested in the idea, and that a good friend of his had a machine shop. Of course, the man at the machine shop didn't understand what I wanted, but the Villager did, so I got him to go up to the QRS man's house to study the machine, take measurements, and copy it.

After the 20th Study, I changed the punching machine. It wasn't necessary to use the evenly spaced notches anymore.[9] You could adjust it to punch in any place. So the only limitation was on the spacing of repeated notes we talked about earlier. At the same time of this modification, I added another attachment, so that I could punch four holes at a time. Until then, there were very few pieces with any sustained notes in them because there was so much effort involved in punching out strings of holes. Everything was staccato!

Reynolds: What is the maximum length of the rolls in feet? And what about transport speed?

Nancarrow: Well, I had a few fairly large spools, that will just go into the piano and, forcing it, I can get up to about 100 feet. The maximum speed is about 14 feet per minute. Naturally, the lower you get, the less fidelity. The speed is not as even, and if you go way down . . . It goes down to stopping, but just before it stops, it's extremely slow, but not very even. The lowest speed that's fairly practical is about three feet a minute. That's the rate I use in *No. 37,* which is a little over ten minutes long. That's an extreme: as slow as the piano would operate accurately along with the maximum length of paper.

Reynolds: How much control do you have over dynamics?

Nancarrow: You can push special holes on either sides of the roll, so you can control the top and bottom half of the keyboard independently. On these pianos, I have about eight levels of dynamics. They are called "reproducing pianos" and can do fantastic things. But I always use nothing but terrace dynamics—always. The pianos also have two different kinds of crescendos. I just don't use them. I mean, it's just not to my taste. There are two different speeds: one that goes from the lowest level to the highest volume in 1 and 1/2 seconds, another one that takes about 5 seconds. Then you can combine them in different ways. I don't want them. I use all of the levels, though. In fact, when I want a crescendo, I do it by steps.

Reynolds: Finally, some biographical information. I know you were born in Texarkana in 1912, that you had experience with jazz, fought in Spain and returned to Mexico. What can you say about your musical training or influences?

Nancarrow: My formal training consisted mainly of short periods of study with Slonimsky, Piston, and Sessions, mainly the latter, and that exclusively counterpoint. My only professional activity in music was playing the trumpet—jazz, German beer halls, symphony, etc.—for quite a few years. Early influences included Stravinsky, Bach, Varèse, and Bartók. They still are, but slightly less for Varèse and much less for Bartók. The most important musical event I remember was hearing "Sacre" for the first time when I was about seventeen. I don't know what else to add. I have not had much "history."

What would happen if you said my music was anonymous, that you found it in some excavation in Mexico, or some such . . . ?

JUNE 14, 1981, SAN FRANCISCO

Reynolds: I know that you value your quiet life in Mexico City, and I wonder what you feel now about the growing attention that's being accorded your music? In addition to the personal satisfaction that must be there, do you feel that consistent interaction with other musicians such as those who are now interested in your music might have had any impact on your development as a composer?

Nancarrow: Oh, I don't doubt it [laughing]. It just didn't happen that way. Naturally, I'm very pleased with the reaction now, in fact not only here [in San Francisco], but in Europe . . . everything I'm pleased with. I just hope it doesn't spread to Mexico.

Reynolds: You have kept very careful track of magazines about contemporary music, books, and so on. That was a kind of one-way interaction with the music world. You were aware of them, but they weren't feeding back to you.

Nancarrow: Yes, well, actually my only feedback was having those player pianos. I would do something and they would feed it back to me.

Reynolds: So much of a contemporary musician's time is consumed in coping with all the information . . . your concentrated situation may have been most important.

Nancarrow: Yes, that's a possible factor. And probably *because* of the piano's limitations, I had many more possibilities, since I wasn't spread out all over the place, I could concentrate on this *little* thing.

Reynolds: What do you think of the notion attributed to Stravinsky in *The Poetics of Music* that the more constrained he was, the more free he was?

Nancarrow: I agree with that. Also, you remember the famous statement of Stravinsky's when he started on a piece of music: "I just sit down and I'm overwhelmed at the infinite possibilities." [laughs]

Reynolds: In the case of the player pianos, the possibilities are certainly very large.

Nancarrow: Yes, but they are very limited, too. He was talking about, you know, the whole world of sound. And so I'm not so overwhelmed by the possibilities of a player piano, because it is a tight little world.

Reynolds: I'm curious to know where those complex tempo ratios in *No. 37* come from.

Nancarrow: That's something that Cowell suggested as a "tempered scale," *suggested* also as a time relationship. So I just took it. It's in [his book] *New Musical Resources;* I'm almost sure that's where I got it from.

In *37,* various sections use only part of that gamut [of tempo relations], and there are very few places in there where all twelve go at once.

Also, by the way, I started drawing up those templates years before I did *No. 37.* In that series, you have all levels of things: 2:3, 3:4, 3:5. 5:9, simultaneous groups such as 5:6:7 and even higher groups.

Reynolds: Roberto Gerhard used to say that a dissonance of three pitches was the most uncompromising, that a fourth pitch always resulted in a kind of softening of the dissonance. I wonder about your notion of "temporal dissonance," in two senses.

First of all, do you think there is an optimum number of canonic voices for projecting the most *intense*—if that's an appropriate word—the most intense temporal dissonance? Is there an optimal number of voices that produces a situation in which you get the most satisfying sense of "temporal dissonance"?

Nancarrow: I've never thought of it that way, but come to think about it, probably the piece with $2:\sqrt{2}$ with just two voices is probably the most dissonant of all because it's just the two clashing all the time.

Reynolds: As you add voices . . .

Nancarrow: It tends to smooth out . . .

Reynolds: Secondly, you have said that you certainly wouldn't define a temporal relationship of 1:2 as dissonant, but that you would call a 2:3 relationship dissonant and more and more so up to the extreme of the irrational ones. I have some difficulty understanding what you mean by temporal dissonance there. For example, in *Study 39* where you have 60 against 61, it is hard to understand how that would be "dissonant" if, metaphorically, dissonance is a tension that requires resolution.

Nancarrow: No. Perhaps that's the wrong word for that one. Of course, it's not dissonant. In *60:61,* all [that happens] is that one part goes along at a certain speed and another at a slightly different speed that gradually catches up. No, there is really no relationship there except in that sense of the total time it takes to do something.

Reynolds: As tempo ratios get more complex, it seems that there may be an optimal window. Very simple ratios are obvious, but complex ratios don't give you a sense of orientation that allows you to hear them in related terms.

Nancarrow: I've thought about this. I don't think, say, the polyrhythm of 4 against 5, where after every 4 and every 5 it comes together on the block, but I do think that a *tempo* of 4 [against] a tempo of 5 is dissonant because you have a line going against another line. The former situation is coinciding on, let's say, the measure, and the latter isn't. That's what I call temporal dissonance.

Reynolds: Perhaps the gradual coming together of two things that are out of synchrony at the beginning (the accelerating and ritarding tempos and speeds in *27*, in *39*, or in *40b*) requires another term.

It seems that your intuition about how clear the musical elements that carry a tempo need to be—how carefully one needs to introduce and remove them from the overall texture—is very subtle and always on the mark. One doesn't feel in your earlier music that one is being confused. It is always *there*, and one can get hold of the material. But when you get into the forties, with two pianos at once, the complexity is sometimes just stupefying. The resources of two player pianos can result in an overload situation. Apparently *No. 44* has a simple tune and an ostinatic flow underneath. Are you tending towards a new simplicity?

Nancarrow: This particular one is the first that I decided to do as an aleatory piece. It turned out to be very simple in all areas. It's a very simple melodic line in two closely related keys. I just finished it and tried it in several different tempo relationships and they all work fine.

Reynolds: When you listened to *40b*, did you ever feel, perhaps at the first, "that's too much"?

Nancarrow: No.

Reynolds: Have you heard other music that you thought was too complex?

Nancarrow: Oh, yes. I think that a lot of Boulez is too complex in the sense that one can't hear all the things he does.

Reynolds: Then in the case of Boulez, it might be that the experience of complexity has to do with the nature of the musical materials that are projecting the structure?

Nancarrow: Of course, that has a lot to do with it. I'm talking about the "total serialism" period. You just don't hear those things. They're not for the ear. It's paper music, I think.

Reynolds: If you're listening to a study like *40b*, all the materials make an impact, but I am sure I would have trouble registering precisely what it is that's happening structurally within the lines.

Nancarrow: Well, in one hearing you certainly couldn't, but I think that someone with a very good ear could figure it out. But my essential concern, whether you can analyze it or not, is emotional; there's an impact that I try to achieve by these means.

I just started on the aleatory angle, so I don't know what it's going to do. *No. 44* was fairly short and didn't cause much work. The next one is going to be a lot of work. I still haven't figured out just how I'm going to . . . join the different parts. If you just start an aleatory thing and let it go on, things get out of hand.

When I work, any piece that I do sort of suggests the next piece in a way, it gives me ideas for something else.

Reynolds: You mentioned that some Studies pleased you more than others. What are your favorites?

Nancarrow: Well, I don't know. I'm sort of fond of that *33* (the *2:2*). Of course, I like that *40, b* especially. I like *25*. Put it this way: there are some that I'm *not* as interested in as others. [laughs] *28* and *29*, I hardly remember them, what they're about. There are some pieces that I have very sharply in my mind and some that just sort of faded away.

Reynolds: Speaking of time and memory, there are a number of Latin American writers now—Borges, Garcia-Marquez, Cortezar—whose international impact is rather considerable.

Nancarrow: [Garcia-Marquez has] a tremendous imagination, and especially *One Hundred Years of Solitude* is one of the few successful attempts to manipulate *time* in literature. A lot of writers have tried, and it didn't come off. I really think he was successful. I mean, he does it. Sartre tried to do it in some of his works. It didn't work. Various people tried, but this is the most successful effort in that sense.

Reynolds: Your realization of temporal dissonance seems to me also rather unique, and one of the most extraordinary aspects of listening to Study after Study is finding such fertility of imagination. It's astonishing. They do come on, each one, as a surprise.

Nancarrow: Well, I guess so. . . .

NOTES

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1. I attended a conference on electronic music at the University of Mexico in July 1975, and Nancarrow came to some of the events.

2. Premarked reference strips of heavy paper are used in marking off a basic working grid on the paper roll that will later be punched, and on corresponding manuscript pages. There are separate strips for each of the proportional relationships of tempos and of accelerations or ritards.

3. See page 16 for a description.

4. See page 20 for a discussion of the different treatment of the hammers in Nancarrow's Ampico player pianos.

5. *41a* is a canon of tempos related as *41a:* $1/\sqrt{\pi}\ /\ \sqrt{2/3}$; *41b:* $\sqrt[3]{\pi}\ /\ \sqrt[3]{13/16}$.

6. Two feet of roll represents a little over eight seconds.

7. The density of individual, successive notes in this run is eighty-eight per second.

8. *No. 30* was written in mid-1960s.

9. And, therefore, it was not necessary to have all temporal relations whole number multiples of the basic notch spacing.